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One Way to Make Parks Attractive.

AT a conspicuous point on a hillside in the Arnold Arboretum there is planted a broad stretch of Forsythias, and about three weeks ago, when these shrubs were all in bloom, every visitor was struck by the great stretch of bright yellow which shone like molten gold in the sunlight. The Forsythia is a common shrub, and the only remarkable feature in this spectacle was its unusual extent, and the lesson it conveyed to every beholder was that a thousand Forsythias massed together on an acre of ground will make a much more striking display than the same plants would if scattered along a walk or a driveway for a mile or more. One would tire of such a blaze of yellow if it remained all summer long, but it burns out before it grows wearisome, and when the flowers have fallen all too soon, we think with pleasure of the remarkable pageant until the year brings around the flowering season again. If any one raises the objection that there is something spectacular or theatrical in planting of this sort, we must answer, as we have done before, that no one complains of nature for spreading out hundreds of acres of Rhododendrons on the summit of Roan Mountain, and, indeed, when one looks over this foreground at the great landscape beyond he sees nothing inharmonious in the picture. We do not tire of Dogwood-blossoms extending, like snowdrifts, for miles along a wood border in the middle states, or of ten thousand Red-buds in bloom at the same season, but we realize that these great combinations can produce effects which are marvelous in their impressiveness, and which ought to be repeated, if possible, in our great rural or semi-rural parks.

Of course, it is easy enough to overdo the matter in providing what are known as special attractions for visitors to the park. Playgrounds for games of various sorts, provision for skating or music and for museums of animals or plants have been introduced into parks, but they are to be commended only so long as they are held in strict subordination to the design as an artistic whole. It must be remembered, too, that the general landscape ought never to be marred by anything which conflicts with its motive, and great masses of flowers are not to be used without caution and judgment. But the wild flowers of any region, for example, might be planted along the wood borders and in the glades of any park in such a way that they would not detract from its general beauty and would increase the attractiveness of its details. Besides this, such planting would serve a distinct educational purpose to all who are inclined to study their local flora.

It is in a line with this view of the case that we have in former numbers of this journal suggested that the borders of small park openings should be composed of shrubs which flower at the same time of year, one meadow being belted with shrubs which flower in early May, another one with those which flower a week or two later, and so on, so that there might be a series of gardens like a panorama showing their flowers one after the other, according to their season. In a large park system masses of a single shrub or tree could be used in sufficient abundance to be impressive when their flowers are open, and yet they might form so small a portion of an extensive view as not to interfere with the variety of the landscape when out of flower. Along one of the driveways of the Arnold Arboretum a hundred and twenty different varieties of the common Lilac are now in flower, and while such a collection has an educational value for all who care to study these plants, it has besides a beauty which can only be appreciated by those who have been privileged to see them. The material for such striking displays is almost endless, and it need not by any means be confined to flowers; trees conspicuous for the beauty of their foliage in spring or autumn could be grouped together, and every one who has seen a swamp in winter lighted by the scarlet berries of the Black Alder can readily understand how the bright-colored fruits of many shrubs can be massed impressively.

This general subject was suggested by the great number, variety and marvelous beauty of the so-called "flowering Apples," which were at their best a fortnight ago, and the spectacle which they presented again proved that they offer unequaled material for massing in large places. A double-flowering Peach, especially the one with scarlet flowers, is almost a startling object when in full bloom. There is also a double pink form with flowers almost identical in color with those of our ordinary Peach, and a white-flowered form which cannot be excelled for the purity of its color and the profuseness of its bloom. These trees, however, have no great beauty except during their brief flowering season, and in our northern states, even when the buds are not killed by early frost, they are subject to many diseases and the attacks of borers, and are short-lived trees at the best. The Plums, too, of various species are delightful small trees, but the Apples as a class are altogether superior for general purposes. Most of them have no off-years and are covered with flowers every May. They are perfectly hardy and long-lived. The flowers on the various trees differ much in color and in abundance, some of them completely covering the branches, and others, although borne in great quantities, are sufficiently scattered to show the softening effect of the light green of the young leaves. The plants vary greatly in size. Some of them are low, spreading shrubs, others are small, bushy trees, others have an upright habit, and many of them have a way of throwing out long wand-like branches at graceful angles, which gives them an exceedingly picturesque outline. The fruit of some of them, especially the varieties of the Asiatic Pyrus baccata, is beautiful and fragrant. There are several species like P. spectabilis, P. Toringo, and perhaps others which have been frequently crossed, so that it is hard to distinguish some of the plants botanically, but they are all beautiful objects at any season, and especially so when in flower. The so-called Japanese Crabs are particularly showy on account of the color of their buds, which are crimson, and the white or pink masses of their flowers are often beautifully varied by a few unopened buds near the ends of the branches. Our own native Crab, P. coronaria, is also extremely useful for its large fragrant flowers and its odorous fruit, and it has the advantage of flowering later than those of the other

so-called ornamental Apples. Altogether, wherever it is desirable to add to the general attractions of a park a special display of flowers in early May, no class of plants can produce such splendid effects as these flowering Apples.

During the last session of the legislature of New Jersey a bill was introduced for the establishment of a commission to investigate the forests of the state, to determine the best methods of forest management adapted to existing conditions, to arouse general interest throughout the state in various ways, and to prevent, so far as possible, the ravages of forest fires. All these objects are worthy ones, but fortunately investigations have already been undertaken under the direction of the Geological Survey which look toward the accomplishment of the same ends. The forest interests of the state, therefore, will receive no injury because the Governor has failed to approve this bill. The State Geologist is qualified to superintend work of this sort, and everything which can be accomplished by this commission can be done by that officer. There is no doubt that the forests of New Jersey have a high value, but if the state makes any appropriation for protecting and developing this great natural resource, it can be used for the present to much greater advantage by the Geological Survey, which is already organized and active, than by the creation of another new board for this special duty.

The Source of Abietene.

Abietene is the volatile product from the resin of some west American Pines, and is the counterpart of turpentine which is distilled from the resin of some other Pines, chiefly those in the southern United States. Abietene is a more volatile liquid than turpentine, but both are hydrocarbons, although belonging to different series. About the year 1878 samples of abietene were received in Philadelphia with the statement in one case that it was the product of Pinus Sabiniana, and in another case that it was derived from P. ponderosa. Of recent years it has come to be understood that the commercial source of abietene is P. Jeffreyi. As I had in my possession the barks from P. ponderosa and P. Sabiniana, it occurred to me that something might be learned by examining the volatile product of these two samples. They were accordingly distilled, and, while the yield was small, it was enough to get the characteristic orange odor of abietene in both cases. In another experiment the amount of volatile oil in the bark of P. ponderosa was determined to be about 0.2 per cent. The bark, therefore, would not be a profitable source of the oil. It is probable that both P. ponderosa and P. Sabiniana have yielded samples of this oil, although it may be possible that P. Jeffreyi is at present the commercial source. Some years ago Professor Wentzell, of San Francisco, detected oil of turpentine in the resin of P. ponderosa. It is possible that both oils occur in different parts of the tree. Unfortunately, the commercial production of abietene and its resin is in the hands of a medicine company, which is disposed to attribute to these products curative virtues they do not possess. It is doubtful if abietene has any medicinal virtues superior to common oil of turpentine, or if the residual resin is superior to common rosin.

College of Pharmacy, Philadelphia. *Henry Trimble.*

A river with its waterfalls and meadows, a lake, a hill, a cliff, a forest, ancient trees standing singly—it is objects like these which give beauty to a township and have a high use which dollars and cents never represent. They do more for education than hired teachers or preachers, and if the inhabitants of a town were wise they would cherish and preserve them. . . I know a town in Massachusetts with a noble oak wood, to which, if preserved a century more, men would make pilgrimages from all parts of the country. As in many countries precious metals belong to the Crown, so here more precious objects of rarer beauty, like groves and river banks and mountain peaks, should belong to the public.—*Thoreau.*

Quercus lobata at Ukiah, California.

The great White Oaks make the most delightful features of our valley landscapes. A few years ago, Ukiah Valley, viewed from the foot-hills, appeared to be covered entirely with one vast Oak forest. Throughout our rich bottom-lands immense spreading trees could be seen on every hand, now thickly dotting the grain-fields, now in extensive groves, and every valley view had a background of great white trunks and domes of foliage. The trees followed the smaller streams up into the foot-hills, they luxuriated in the deep rich coves about the base of the mountains, and even on the mountain slopes they grew wherever they could find the deep rich soil which seems essential to their happiness. Higher up the flanks of the mountain they soon gave place to the Black Oak, Quercus Californica, and the Post Oak, Q. Douglasii, which continued over the drier lands and over the mountains. But it was in the deep rich deposits of black gravel on the main valley floor that they grew most thickly and attained their greatest size. Year after year their numbers have been thinned slowly when grain or hay was the usual crop, but more swiftly since large orchards have been planted, and fruit, Hops and Alfalfa have become staples. But, in spite of the great gaps made in their ranks after all these years of cutting, thousands of veteran specimens still live and many large fields remain really groves

Fig. 25.—Quercus lobata in the Ukiah Valley, California.

of magnificent Oaks, which stand as they stood when the first white man entered the valley.

On the east side of the valley there was a wide belt a mile across and five miles long, which was once one great forest, and portions of it still contain our noblest trees. Other valleys in California have laid claim to pre-eminence in the beauty of their groves, and there are magnificent trees scattered through all of our valleys, but I believe that, taking into account the splendid proportions of some individual Oaks, the average size of all, with their

general stateliness and dignity of form and expression, the Ukiah Valley Oaks are unrivaled. Our valley is surrounded by high mountains, and is thus sheltered from the winds, so that the trees are apt to be symmetrical. The large rainfall and rich soil have done the rest.

Perhaps the most striking feature of the White Oaks, aside from their size, is the gray moss hanging in long streamers from every small limb. In the winter, when the moss is green on the large limbs, the contrast of this color with the pendent masses of gray moss and the brown bark is very beautiful. The types of White Oak are innumerable, and every tree seems to have a distinct form. There are full-headed trees, the top breaking into a wilderness of small ascending branches, and as fully furnished as if they had been pinched and trained by a gardener. Again we note immense boles with sturdy ascending branches, each large enough for a tree, and ending in stiff short branchlets. Then there are noble trees which branch evenly outward in perfect balance with hardly a twig broken and towering to 120 and even 140 feet in the air. Perhaps the most beautiful of all is the so-called Weeping form, in which the tree branches regularly and spreads widely, while numberless branches are thrown straight down. Some of these pendent branches are thirty feet long and little larger than a man's arm.

In a field on the east side of the river I recently measured some trees which ranged from eighteen to twenty-two feet in circumference at five feet from the ground. In the same field of about sixty acres there stood at least fifty trees over fifteen feet in circumference. Many of them had a great spread of branches, and one I measured covered a circle 144 feet in diameter. This tree girthed nineteen feet six inches, and its height was about 120 feet. Still larger specimens were to be found in another grove near by which has hardly been touched by the axe. In it I found a perfectly developed specimen in full health and not disfigured by the loss of any limbs. The trunk girthed eighteen and three-quarter feet at five feet from the ground, and it was more than 120 feet high (see fig. 25, page 202). The largest Oak that I have yet measured is growing here. The trunk has a small hollow on one side (see fig. 26, page 205), but otherwise it is sound. At five feet up it measures twenty-three feet nine inches in circumference, and at one foot above the ground 132 feet.

Ukiah, Calif. *Carl Purdy.*

Foreign Correspondence.

London Letter.

RICHARDIAS.—The new yellow-spathed species, Pentlandii and Elliotiana, have lately been conspicuous in good collections and at exhibitions. Nurserymen are fully alive to the value of these two plants and are working up large stocks of them as rapidly as possible. They ripen seeds freely and they are also prolific in the development of supplementary buds on the tubers, which are a ready means of multiplication. I lately saw about a thousand healthy young plants of R. Pentlandii in a nursery in the south, and in one of our London nurseries I was asked three guineas for a plant of this species in flower. The spathes vary in size according to the strength of the plant and the cultivation. I have seen this year spathes of both species as large as the largest R. Africana (Æthiopica) and of the richest yolk-of-egg yellow. The two differ in that the leaves of R. Elliotiana are spotted with white and the spathe is uniformly yellow, while in R. Pentlandii the leaves are unspotted and the spathe has a large blotch of black-purple at the base inside. We have now, however, plants which combine the spotted leaf with the purple-blotched spathe; possibly these are hybrids between the two. There are also forms of R. Pentlandii with spathes of a sulphur-yellow color. The hybridist also has been at work on these plants, crosses between them and R. Africana having been successfully made. In my opinion these yellow Richardias are the most valuable additions that have been made to greenhouse plants in the last twenty years. The time will come, and shortly, too, when the flowers will be offered by the dozen by the market-growers, and they will be as conspicuous in floral decorations as the White Lily of the Nile is now. Cultivators should bear in mind the fact that both R. Elliotiana and R. Pentlandii are warm-house plants.

HYBRID RHODODENDRONS.—The most beautiful Rhododendrons in flower at Kew at the present time are first hybrids—that is, crosses between two distinct species—and probably the handsomest ever raised is one called Kewense. This is the offspring of R. Aucklandii and R. Hookeri, both tender Himalayan species, and yet the progeny is as hardy as R. Catawbiense; at any rate, it is perfectly hardy at Kew. Even when not in flower it is a handsome evergreen, but when laden with its large loose trusses of big bell-shaped blush-white fragrant flowers it is a magnificent picture. It was raised at Kew and flowered for the first time about ten years ago. Grown in a cold greenhouse it is equally meritorious. The hybrids between R. Fortunei and R. Thomsoni are also flowering beautifully now. These were raised by Mr. Luscombe about twenty years ago, and he presented a set of them to Kew before they flowered. They have since been named R. Luscombei, Mrs. T. Dyer and Frances T. Dyer. Mr. George Paul, of Cheshunt, has raised a number of hybrids between R. Fortunei and some of the popular varieties of the Catawbiense type. These hybrids are also flowering at Kew, and in distinctness and beauty they prove to be of quite exceptional merit. Much has been done with the Rhododendron, but a great deal more remains to be done before we have got to the limit of the capabilities of this great and varied genus. A new and beautiful hardy species from China is now flowering for the first time at Kew, and we have seeds sown of several very remarkable species recently discovered in New Guinea. The potentialities of the Rhododendron as a garden plant are seen in the place it fills among hardy shrubs, among greenhouse plants and among perpetual-flowering shrubs for the warm house. These last we owe to Messrs. Veitch's operations upon the Malayan species.

PALMS.—If a census could be taken of the plants grown by nurserymen for indoor decoration it would probably show that Palms are first, and the rest nowhere. This is a very radical change from the state of things a generation back, when Palms, with the exception of Livistona Chinensis (Latania Borbonica), were grown only by admirers of the curious and rare. At that time the Kentias, from Lord Howe's Island, were rarities, and Cocos Weddelliana was as expensive as Phalænopsis. Now, millions of young plants of these two genera alone are raised almost every year from seeds. "Good Palms will sell when nothing else will," say the nurserymen. This preference for Palms is deplorable in one sense; it is driving many interesting plants out of cultivation. The nurseryman will not grow the collection plants which formerly were in favor; on the contrary, he is glad to get rid of them, often burning them by the houseful to make room for Palms. Surely we may yet hope that a taste for interesting and choice indoor plants similar to that which stimulates the collector and cultivator of Orchids, alpine plants and hardy trees and shrubs will not be allowed to die out entirely. Indoor gardening needs reforming and bringing into harmony with the best style of outdoor gardening. This can be done by discarding, as far as possible, the flower-pot and plant-stage and making the houses look less artificial than they are now. I am certain that the present style of greenhouse gardening is responsible for the lack of interest in it which is so evident in the horticulture of to-day. Two of the best proofs of this are in the preference visitors to Kew have for the temperate house, where the plants are all grown naturally in beds, and in the popularity of two show-houses in the nursery of Messrs. Veitch & Sons at Chelsea, one for Orchids and the other for greenhouse plants. In these there are no stages, the plants standing in natural groups in artistically arranged cork, rockwork and cushions of Selaginella, etc.

New Plants.—The following have recently received certificates: Rhododendron superbissimum; a hybrid between R. Veitchii and possibly R. Edgeworthii. These are the parents of R. Forsterianum, one of the best of greenhouse Rhododendrons, but Messrs. Veitch's new hybrid differs from this in the form of its leaves and in the size of the flowers, which are broadly campanulate, wavy and nearly six inches across. Lomaria ciliata grandis; a form with very wide pinnæ, approaching in this respect Blechnum Brasiliense. It was shown by the raiser, Mr. May, of Tottenham. Lithospermum tinctorium; a pretty alpine with the habit of the common Bugloss, but smaller in all its parts. The flowers are in terminal clusters and are of a deep blue color. It is a native of Arabia and Egypt. According to botanists, its correct name is Arnebia tinctoria. It was exhibited by Mr. Bennett Poë, of Cheshunt. Primula Trailli; an Indian species very closely allied to P. involucrata (Munroi), differing only in having larger leaves and flowers. The former are elliptic, about four inches long, green, with long petioles, and the flowers are in loose clusters of about six on long slender scapes; they are nearly an inch across, milk-white and fragrant. Shown by Mr. G. F. Wilson, Weybridge. Narcissus Naiad; a hybrid between N. Empress and N. triandrus, and one of the best of the hybrids raised by Mr. Engleheart. It has large white segments and a large wide-spreading straw-colored trumpet, and is a most distinct plant in every way. It was awarded the prize for the best new seedling Narcissus of the year. Odontoglossum crispum heliotropium; a first-class certificate was awarded to a plant shown under this name by Mr. R. B. White, Arddarrock. The flowers are large, white, tinted with rose, and heavily blotched with red-brown spots. It is one of the most beautiful of the many forms of this Orchid now known.

London. *W. Watson.*

Plant Notes.

Pyrus Japonica.

THE Japanese Quince, Pyrus Japonica, also known in catalogues under the name of Cydonia Japonica, when well grown is one of the most satisfactory of the early-flowering shrubs which have been brought to our gardens from those of Japan or China. Among the points which recommend it to popular favor are its hardiness, quick growth, early flowering, its bright, clear-colored blossoms and its clean and not often diseased foliage. To these qualities might be added its ready adaptability as a good hedge plant, and the fact that some use may be made of its bright greenish-yellow fruit in the autumn.

Although accounted a hardy shrub and one which will bear a temperature passing to some degrees below zero of Fahrenheit, it will be sometimes injured in winter if grown in too cold and too poorly drained soil. For this reason it should be planted in a warm, well-drained soil, such as a sloping bank. Here the wood and buds are most likely to be thoroughly matured in the autumn before frosts occur.

The original type of this Japanese Quince appears to be the single deep scarlet-flowered plant which represents the species in most gardens where it is grown. A white-flowering variety is now frequently seen in gardens, although it cannot be called common. This white-flowering variety is found in catalogues under the names of simplex alba and nivalis, although a third one is offered under the name of Pyrus Japonica candida. The first two are much alike or identical, the third has rather broader, larger leaves and larger flowers with large rounded petals. One of the prettiest of the varieties is intermediate in color, between the red type and its white variety. This appears to pass under two or more names, Moerlosi and Rosea being most common. The buds of this are light rose-colored or pink; when the flowers open they are white and rose-colored, often curiously blotched, and as the blossoms grow old they often change to a deep dull red before the petals fall. The plant sold under the name of Versicolor has very similar characteristics, but varies enough to show that it had a separate origin. The variety known in some collections as Grandiflora has flowers larger than normal, at first pale or whitish, tinged with rose color, the rose color gradually diffusing through the petals and changing them from white to red as the blossoms grow old. The form Aurantiaca has what are called orange-scarlet flowers, a variation such as may be found among a number of seedlings.

A variegated-leafed form, called Tricolor, is interesting to those who care for the abnormal in nature. There are several so-called double-flowering variations, but the "doubling" is not far advanced, and a few only of the stamens have been changed into petals in addition to the normal number of five found in the flower.

Pyrus Maulei, or Cydonia Maulei, a comparatively recent introduction into our gardens, is considered a distinct species by some botanists, and by others merely a distinct variety of the Japanese Quince. It is a smaller and dwarfer shrub than the better-known Japanese Quince, and has smaller leaves, flowers and fruit. The flowers, however, are of a very bright rich red color, and the plant is really a great addition to our list of hardy shrubs. The fruit is bright yellow when ripe and strongly fragrant.

The fruit of the Japan Quince varies greatly in size and appearance on different forms, and it is generally regarded as worthless. With care, however, and in combination with some other fruits, it may be converted into a very agreeably flavored jelly, so that the plant may be made to furnish good material for culinary purposes as well as being ornamental. It makes a most satisfactory hedge in many situations.

For all ordinary purposes, as for hedges, where the red-flowered type is desired, it is sufficient to grow from seed, but any of the so-called varieties or any improved variation from seed should be grown from layers or cuttings. Grafting is often practiced, but shoots from scion and stock too often grow up together and become intermixed in the bush, the stock usually being the stronger and supplanting the scion.

Arnold Arboretum. *J. G. Jack.*

Erythronium giganteum and E. Hendersonii.

THE best-known Pacific coast Dog's-tooth Violet is Erythronium giganteum, although it has been distributed under the incorrect name of E. grandiflorum. All of the bulbs of E. grandiflorum offered to the public for many years past by American seedsmen were really E. giganteum. This is the tallest and most floriferous of all Dog's-tooth Violets. While under ordinary conditions from one to five flowers are usual, it will, under favorable conditions, produce from eight to as many as sixteen straw-colored revolute flowers of large size, no larger, however, than are produced by other Pacific coast species. It grows on the coast ranges on the Pacific slope from San Francisco Bay to southern Oregon. It is not found in the heavily timbered belt which runs parallel with the coast line, but from that section to the great valleys toward the east it is common. On northerly slopes in timber in a loose soil it is at its best, especially where mold has gathered in rocky ledges. Few more beautiful floral displays can be found than the large beds of these in their full bloom. In places they are so thick that their leaves cover the ground and the slopes are yellow with their flowers. In the garden they come on after E. Hartwegii, E. Hendersonii and most of the E. grandiflorum varieties are gone. Plants of the E. revolutum type follow them in flower and outlast them, and, in fact, form seed-capsules before E. montanum shows in flower.

Erythronium Hendersonii is a beautiful species from southern Oregon, which, although differing a little in form from E. giganteum, has a similar leaf and revolute flower. Its color is a fine shade of pink-purple, with the centre a very deep purple to almost black. It is altogether a charming flower and comes third in the season's succession.

Ukiah, Calif. *Carl Purdy.*

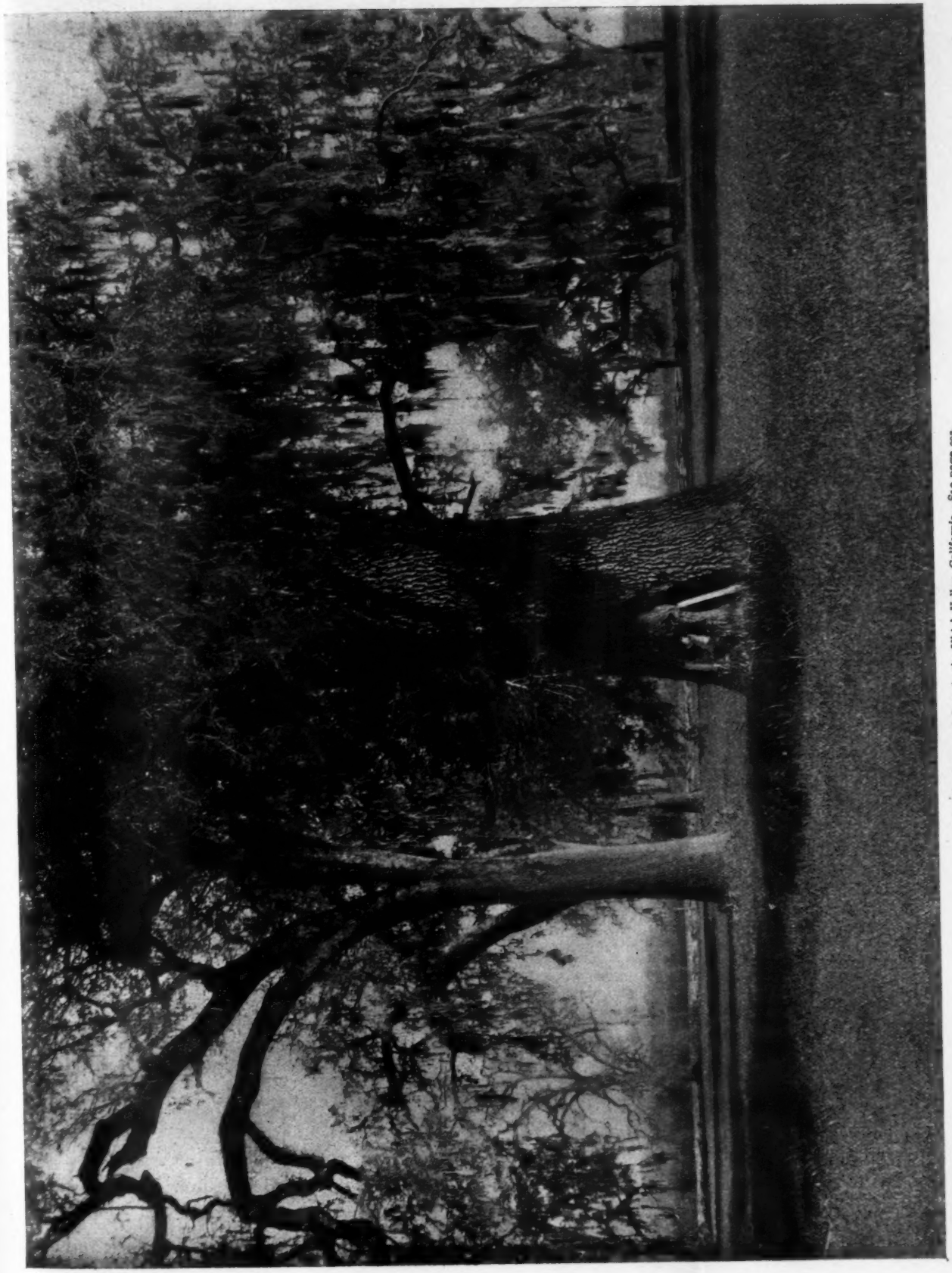

Fig. 26.—Quercus lobata in the Ukiah Valley, California.—See page 202.

Cultural Department.

The Vegetable Garden.

COPIOUS rains during the middle of May and the absence of unseasonable warm weather and of frosty nights have been specially favorable for starting vegetables of nearly all kinds. Peas especially revel in such weather and have made stout haulm which ought to yield good returns later. Our hot, dry summers make it impossible to produce as large, sweet, luscious peas here as in Great Britain, where the cooler, moister climate is extremely favorable to their growth, and their bearing season is much longer. With a little extra attention, however, a satisfactory crop may be grown. Hot weather forces the vines unnaturally, and if the roots are dry one good picking of peas is about all the vines will yield, when the ground might as well be cleared for another crop. A mulching between the rows with Meadow Grass or similar material is useful. If the Peas are sown where they can be watered artificially, and a good standing sprinkler is kept running night and day in the patch, the yield will be increased immensely. For a late crop we still find the old Champion of England indispensable. There are many varieties which produce larger pods and peas and as heavy crops in England, but they are not so satisfactory here for some reason. Stratagem, Yorkshire Hero, Shropshire Hero and Duke of Albany do fairly well; other kinds are unsatisfactory.

Lima Beans should be sown here about the end of May when the weather is settled and warm. If they are sown earlier they do not germinate satisfactorily. We find Burpee's Bush Lima the best of its class and have discarded the Pole Limas entirely. There is really no use for them when the bush varieties will yield fully as fine pods and many more of them in proportion to the space occupied, without the labor of erecting poles and keeping the vines fastened to them in the earlier stages of their growth, and the probability of their being blown down by autumnal gales. We make fortnightly sowings of String Beans until early in August, so as to have a constant supply.

Peppers and Eggplants do best in very rich soil. If a regular supply of liquid-manure and a light mulching can be afforded to the Eggplants the fruit will be greatly improved in quality as well as in quantity. Potato bugs are likely to be troublesome during the early stages of growth, and the plants will need hand-picking daily. Neglect in this particular may mean the loss of every plant in an incredibly short space of time. To destroy the same pests on Potatoes we mix one pound of Paris green with two bushels of air-slacked lime, and dust this over the plants with a fine sifter in the early morning while the foliage is damp. Two applications during a season are sufficient to keep them under.

Tomatoes have recently been planted out. These we will look over once a week to tie up and do necessary thinning out of laterals. Tomatoes are now generally trained on poles or to trellises, and those who have once tried this system will hardly care to see their plants rambling over the ground as in former years. For the best success Tomatoes should be planted on different ground at least every second year. The trellises are easily moved if they are light. Aristocrat and Autocrat are two useful dwarf-growing Tomatoes of the Champion type specially adapted for gardens where space is limited. We have tried both for forcing, but they were not a success. Generally we pick our first fruit out-of-doors about the end of June, from plants set out from six-inch pots with fruit already set. Our indoor plants provide a good supply until the middle of July, when we throw them away. A batch which commenced to fruit at the end of February is still bearing freely, and the fruit of a later lot is just beginning to ripen. As our plants are all grown in pots frequent waterings and copious doses of strong stimulants are needed at this season. Of varieties we have forced this season Cornet is satisfactory; the fruit is of medium size, firm and of good flavor, and it sets very freely in winter. Eclipse has done extremely well. We picked an average of sixty-two fruits from twenty plants in one batch. The fruit is not quite so firm as that of Cornet, and if planted out a large proportion is liable to come hollow. May's Favorite and Comrade are both desirable sorts to fruit from January onward. Some of our most popular outdoor sorts are failures under glass. At a commercial place near-by a grower who had not handled Tomatoes before planted a house 100 by 20 feet with Acme, Lorillard and Perfection in December. A house of this size planted with the proper forcing varieties and treated properly should have yielded 4,000 pounds of fruit, whereas not a bushel has been picked thus far, while the house is a wilderness of laterals almost as dense as an African jungle.

Many growers now transplant their Onions instead of sowing them outdoors, and this is certainly the best method. Plants set out about April 15th are now growing vigorously, and all the attention they will need from now onward is to stir the soil with a hoe or cultivator, and a good watering in dry weather, to make a crop of extra-large bulbs. Doses of liquid manure, applied once in ten days after the middle of June, particularly after a rainfall, will greatly increase their size. Onions are among the few crops which succeed on the same ground year after year. If Leeks have not yet been sown there is still time to make a sowing. To produce good Leeks they should be liberally treated during the growing season, like Celery. Musselburgh and The Lyon are first-class sorts. Early Parsley kept in frames over winter is now running to seed. This is a suitable time to make a sowing of Parsley for plants to be lifted in the fall and set in frames or placed in a cool greenhouse. When large enough to handle, the plants should be thinned out a foot apart. A variety of sweet herbs and pot herbs are needed on most private establishments. Some of these are annuals, while many are perennials. A sowing of any of these may now be made. Sowings of Cauliflower made now will give a good supply of heads in the fall. Brussels Sprouts, one of the finest of the Brassica family, may still be sown, while Savoys, Curled Borecole of different sorts, and Cabbage should not be neglected. Lettuce should now have as cool and moist a location as possible, and a fortnightly sowing will assure a constant supply. Good summer kinds we have tried are Deacon, Black-seeded Tennis-ball, Salamander, Big Boston and Sutton's Cabbage.

Early Celery has recently been planted outdoors in well-enriched trenches, and will be kept moist at the root to insure its steady growth. Our main sowing for winter use is not quite large enough to prick out yet. An additional sowing of Paris Golden should be made now to come in during October and November; if this is sown now there is less danger of its rusting. Cucumbers in frames and houses, particularly those of the English type, now require an abundance of water and frequent doses of manure, while a syringing with tobacco-water or some other liquid insecticide will keep black fly in check. Unless fumigation is done lightly and carefully it is liable to scorch the foliage badly. Squash bugs will shortly be about in swarms, and they will speedily destroy all vestiges of Squash, Cucumber and Melon plants if they are not attended to promptly. Some of these details are liable to be neglected during the rush of bedding out in the flower garden. We dust our plants with tobacco-dust and lime, particularly on the under sides of the leaves while the foliage is damp. A daily journey should be made among the plants so that proper care may be given them, and a few hours of neglect may cause serious loss.

Taunton, Mass. *W. N. Craig.*

Notes on Garden Irises.

BEFORE the Irises mentioned on page 188 have ceased to flower the bolder-bearded species and varieties will make their appearance. As usual, the first to bloom is the purple-flowered I. Germanica, which is the most universally known species of the family. In fact, non-gardening people if interrogated will always say that "an Iris is a big purple flower often seen in old gardens." Following the type closely is the white variety and also the white Florentine Iris. Both of these Irises are slightly tinged with light purple, but are strikingly beautiful, having also bold flowers on tall stems and broad erect leaves. Both of these species are scentless. The flower which often does duty as I. Florentina, and is fragrant, is a form of I. pallida. There is a pure white form of I. Florentina known as I. albicans. Good forms of this are treasures not often to be had from the dealers.

Lately there has been introduced a superior form of Iris Germanica, variously known as Macrantha or Amazon. It bears a flower much larger than the type, but similar in coloring. The hybrid German Irises are also coming into flower. Of these I have several times in Garden and Forest given details which it seems unnecessary to repeat, but it may be said again that a carefully selected lot of these plants will give at this season in the garden of hardy plants a most charming and delightful effect with a minimum of trouble and expense.

Of a distinct type are the Siberian Irises, which are also of this season. These are beardless Irises with tall grass-like leaves, and as they have short creeping underground rhizomes they make dense clumps of the utmost hardiness, and are very useful and effective in the garden. There are several forms with purple and white flowers which are of moderate size. There is also another narrow-leaved Iris, very common through Asia, I. ensata. The tall leaves are strongly veined, and the

flowers, which have narrow petals, light lilac in color, are borne on short stems among the leaves. I rather enjoy this species, despite its tendency to weediness, but as no one else seems to fancy it, it is, perhaps, better not to recommend it.

It is very difficult, perhaps impossible, to convey to the reader correct impressions of the colors of Irises as so many of them are purple. As this is a compound color, ranging from the reds to the blues, it has innumerable hues which one can only hint at as they appear in the various flowers. Not all of these hues are pleasing to me, and perhaps others might not fancy forms which might be commended, but I have no hesitation in noting the beauty of I. Kochii, which is of a most intense purple color of a reddish tint. This bears large flowers, and is among the most desirable of garden Irises.

None of these Irises offer the slightest difficulty in cultivation in ordinary garden borders, the intention of these notes being to indicate only the useful, easily grown and effective kinds. This note, it will be observed, mentions two types of Irises, those with thick rhizomes which creep at or near the surface, and those with thin underground rhizomes—I. Sibirica and I. ensata. The latter may be planted, like any herbaceous plants, with the crowns at the surface. The others should be planted with the thick rhizomes only half-buried. These may be planted at any time when the ground is warm, but I prefer, if possible, to move them just after flowering, as they soon thereafter make a new growth, and by autumn are strongly established and will be effective the next spring, which they seldom will be if planted in the fall. The exception to this would be when plants are only moved a short distance and are not checked. In such cases it really is of little importance if planting is deferred to that time. Ordinarily, however, one receives the plants from a distance, and they have become dormant. In such cases, if received in the late year, I prefer to winter them in frames.

Iris notes for the middle of May would not be complete without calling attention to some other species which are by no means to be considered as reliable garden plants. At this time commence to flower those curious Asiatic Irises which, being natives of countries with rainless summers, require special and careful culture. They are to be classed among those which the gardener considers "interesting" plants, by which is usually understood those which give more trouble than flowers. Regelia and Oncocyclus Irises are, however, amenable to rational treatment, which will vary somewhat according to latitude of the garden. Here where we have very severe weather sometimes and only occasional snow for protection, it is necessary to retard the growth of the foliage till early spring, say April. By planting the roots, about four inches deep, at the end of November, the leaves appear above ground after hard frosts have ended. They are planted out in fully exposed borders and care is taken that they are well supplied with water while growing. Soon after flowering the old leaves show signs of maturing. At this time it will be found that new buds are well formed. The plants are then lifted, planted out in Lily-pans and kept perfectly dry and warm during the summer. Care must be taken in the fall to keep them cool, to prevent their starting prematurely. Under such treatment fair success is had here. All the species are quaint and odd in form and coloring. For instance, I. Suwarowi has standards lined with blue and edged with golden-brown; the styles are also brown, the crest a bright blue and the falls also lined with blue and with a dark blue signal. I. Korolkowi concolor is of a pure heliotrope hue. I. lupina has a curious combination of yellowish green with black dots and linings. I. nigricans, a new species, is somewhat in the way of I. lupina in coloring, varying in hue and in forms of petals. Professor Forster and others have hybridized many of these Irises and the hybrids are as quaint as the parents. One of these, I. parkor (paradoxa × Korolkowi), blooms very freely here and has richly colored dark purple flowers, the hairy signals being a rich plum-purple color.

Elizabeth, N. J. *J. N. Gerard.*

Flower Notes.

FLOWERING plants of Primula Japonica in crimson and white have been the prettiest things for table decoration we have had this spring. They were raised from seed last spring and grown in six-inch pots. When autumn came they ripened crowns and were kept with a limited supply of water in a cool pit until spring, where they have been brought into bloom without heat. In sheltered spots these Primroses are hardy. The broad handsome foliage resembles that of the common Primrose and has a distinctly rosette-like arrangement. The flowers are borne in successive whorls on lofty scapes, sometimes over two feet in height. It is a giant among Primroses. Compared with this, Primula cortusoides is a gem. Its small, rounded, slightly hairy, sinuate leaves hug the ground, and from this mat of leaves arise slender scapes of lovely umbellate rose-colored flowers. There are several named varieties, but so far the type has proved the hardiest. It has rhizomatous roots, which creep over or very near the surface, and on this account the plants need slight protection in winter. A few forced plants of the double white English Primrose bloomed nicely in the cool greenhouse during the late winter months. They make two or three new crowns during the winter. After the blooming season we divide them to single crowns and plant them out in a shady corner. Care should be taken that the long fleshy roots go as deeply into the soil as their length allows, or they will suffer during dry weather.

The double Lychnis Flos-cuculi, Ragged Robin, has proved a most useful winter bloomer. The attractive, semidouble pink flowers are borne abundantly all winter; in fact, it is scarcely ever out of bloom. It is quite hardy with us, and increases freely, as any bit of stem will root. In this way it would be possible to get up a large stock of it in a short time.

The rock garden and its surroundings in the grounds belonging to Professor Sargent, of Brookline, Massachusetts, are very attractive just now. The adjacent shrubbery, wooded and grassy slopes are covered with an undergrowth of Narcissus Poeticus, Squills and wild Tulips. Large numbers of bulbs have been used in an effective, yet most natural way. On the rock garden conspicuous are large patches of Daphne Cneorum, which, owing to the mildness of the past winter, is looking fine everywhere. Orobus vernus, the spring Vetch, with rosy Pea-like flowers, changing to purple, is evidently well suited as to location. We have found it hard to establish, though succeeding well enough with other species. The white and blue Grape Hyacinths are remarkably neat. Trollius Europæus, with large incurved Buttercup-like flowers, is interesting at all times. It has a long season of bloom, ripens seed freely, which germinates slowly. Seed sown last spring did not come up until this, while the bulk of a lot sown last autumn is up at the same time, but not all, and probably if we hold over the seed-box until next spring there will be another installment to come up. It is the same with many species of Clematis, Hellebores and other members of the Ranunculus family to which the Trollius belongs. Fritillaria gracilis resembles our common F. meleagris, odd, if not beautiful. Stellaria Holostea is pretty when in bloom, large sheets of white star-shaped flowers, a rapid grower and a good carpet plant for shady places. If obtrusive it can easily be disposed of, and so does not become a nuisance in the way Anemone Pennsylvanica does. The double Vernal Anemone remains in bloom when the single form is long past. Ajuga reptans, with spikes of blue, is not as showy as its deeper-tinted relative from the Alps of Europe, A. alpina, but is a better carpet plant, and capital for covering bare spots in shady places near water. Alyssum saxatile in the sun are sheets of yellow. Iberis sempervirens is a mass of white cruciform flowers. Vernal Snowflakes remind one of the cottage gardens of England. Primula cortusoides is even better this year than last, is well established and blooming profusely. Its rose-colored flowers are as nearly perfect in tint as one could imagine.

Wellesley, Mass. *T. D. Hatfield.*

Notes from the Rock Garden.

NO part of the garden is so interesting at this season as the rock garden. Last winter was favorable for hardy plants, and with abundant rains recently and warm weather now no nook or crevice is without blossoms to delight the lover of early-flowering hardy herbaceous or alpine plants. Perhaps none of these plants has greater interest than Dryas octopetala, especially to me, for during the past six or seven years I have several times raised plants from seed, but have never been able to have them live long enough to come into flower. At last, however, I have been successful, and now there is a beautiful patch of this lovely, modest plant well covered with flowers. The plants were raised from seed some two years ago and were grown in pots until the beginning of last September. They were then transferred to the rock garden where they grew during autumn. They came through the winter in perfect condition. They are in a slightly elevated position in rather deep light soil, where I expect they will grow and spread rapidly. The name was taken from the wood nymphs to whom the Oak was sacred and applied to the plant because the young leaves of D. octopetala, on which the genus was founded by Linnæus, resemble small Oak leaves. The plant is low, shrubby and evergreen, with simple, obovate or subcordate, crenately serrated leaves, white and downy beneath. The

flowers are white, slightly more than an inch in diameter and with many yellow stamens in the centre. In fact, the flowers resemble small, white, single, upright roses. They are produced singly on upright peduncles four or five inches long. It is a native of the cold regions of the northern hemisphere.

Another interesting plant from eastern Russia, which has taken good hold among the stones and rocks, is Dracocephalum nutans. This makes a good rock plant. It self-sows its seeds in the crevices, where they grow up and blossom in the spring. It is six or eight inches high when in flower. The whorls of blue labiate flowers are disposed in long nodding racemes, and the stems are clothed with petiolate, ovate, crenated leaves.

Skirting the edges of some large stones, where the soil is cool and moist, Lathyrus palustris is growing well and blossoming freely. In such a position this is a pleasing plant. It is about one foot in height, and the peduncles have four or five variegated blue and purple flowers. Globularia trichosantha is a mass of blue flowers. It is a choice rock-garden plant and flourishes in an open position in deep light soil. It is exceptionally hardy and withstands the most severe winters. It is six or eight inches high. The light blue flower-heads are pleasing and distinct and are produced plentifully for a long time. Globularia vulgaris is also in blossom; the two species are similar, but G. vulgaris does not grow as tall as G. trichosantha.

The pale blue flowers of Phlox stellaria, which are a different color from all the flowers about them, make this plant very desirable. For masses of yellow there are no better plants in blossom now than Alyssum saxatile and A. gemonense, Erysimum pulchellum, Viola lutea grandiflora and Papaver nudicaule. For the best effect these plants must be grown in large masses where they can be seen from a distance. The best white-flowered plants now in blossom in masses are different species of hardy Candytuft, Iberis; a half a dozen species of Rock-cress, Arabis, and the Drabas, D. alpina, D. frigida, D. Altaica and D. Johannis.

Phlox reptans mantles the soil among the rocks with its creeping stems and soft green leaves, and now it has thrown up numerous flower-stems six or eight inches high, terminated with deep rose-colored flowers. P. procumbens is more dwarf, with flowers of the same color. Both of these showy Phloxes are indispensable in the rock garden. Veronica gentionioides is the earliest Speedwell to bloom. A desirable form here is showing larger flowers and longer flower stems than the type; the flower-stems are about a foot in length, and the light lavender flowers are in long loose racemes. The dwarf, trailing V. pectinata has pretty small downy leaves and numerous small blue flowers. It is suitable for dry elevated situations.

Vinca herbacea is useful and less common than the well-known Periwinkle. Its clinging stems among the rocks and the blue flowers nestling among the leaves are pleasing. It grows best in an open position and in slightly moist soil. The lower edges of the rock garden, where the soil is deep and cool, make a good home for large plants of Dicentra spectabilis, the most graceful plant now in bloom.

Scilla Hispanica is worthy of wider acquaintance. The bulbs are cheap and easily obtained in autumn, and if planted then they are sure to bloom the following spring. The blue flowers are in loose racemes eight or nine inches in length. There is a handsome white-flowered variety also in bloom now. This Scilla grows well in almost any soil and should be planted in a mass. In the shade of some trees a bed of Primula auricula has been flourishing for the last half-dozen years. These plants are quite hardy, and the beautiful flowers may be counted upon each year regularly. Large masses of Lily-of-the-valley fill the air with fragrance as their flowers are beginning to open. This is an excellent plant for shady places under trees, and otherwise unsightly spots may be made green and beautiful with it. The lovely Aubrietias are still blossoming. Orobus vernus has yet some flowers left, and Omphalodes verna is still in good condition. Anemone sylvestris is a handsome plant about one foot in height and has large white flowers. It is easily accommodated and grows freely in the rock garden in almost any position.

Harvard Botanic Garden, Cambridge, Mass. *Robert Cameron.*

Summer Pruning the Raspberry.

REGARDING the pruning or pinching back of Raspberry canes in summer, as referred to by Professor Goff in your issue of May 5th, I may say that some experiments which I have carried on for three years corroborate the views set forth by Professor Goff, namely, that summer pruning is, at least in this climate, an injurious practice. The experiments were begun in 1894. The results, as affecting yield, are shown by the following figures, which represent the number of boxes of berries gathered from each row. The length of the pruned and unpruned rows was the same, of course.

Varieties.	Yield, Pruned.		Yield, Unpruned.	
	1895.	1896.	1895.	1896.
Heebner	90	10	96	19
Springfield	32	11	49	17
Royal Church	31	3	37	6
Carman	25	23	41	39
Thompson's Early Prolific.	36	21	68	46
Herstine	32	11	49	21
Parnell	32	11	37	12
Golden Queen	40	6	59	17
Brandywine	43	..	64	..
Niagara	22	12	46	19
Marlboro	23	3	27	14
Hansell	31	10	47	18
Clark	20	8	37	10
Cuthbert	35	15	70	11
Turner	23	11	50	9
Caroline	47	16	64	32

The canes were pinched twice during the summer; the first time at eighteen inches, the second when the laterals had grown fifteen to eighteen inches in length. In this experiment the number of suckers did not appear to be greater in the pruned row than in the unpruned. I am of the opinion that in all sections where winter protection is necessary, Raspberries should be thined rather than pinched.

Experimental Farm, Ottawa, Canada. *John Craig.*

Correspondence.

Lilac on Privet Stock.

To the Editor of Garden and Forest:

Sir,—The past winter has proved the unsuitability of the Privet as a stock for Lilacs, when planted in severe climates. During December and the greater part of January of last winter the ground in this section was unprotected by its usual blanket of snow. The temperature ranged low, fluctuating between twenty degrees of frost and twenty-five degrees below zero, which latter point it touched on two or three occasions. On examining the collection of Lilacs in the arboretum and on the grounds this spring it was found that a large number of those on Privet stock were completely root-killed. The injury to the stock was severest at the collar, where the bark in most cases could be easily rubbed off with the fingers. The union between stock and scions was clearly defined by the limits of the injury upward. The injury downward extended almost to the tips of the roots in some cases, and in others to the depth of a foot only below the surface of the ground.

Lilacs should be propagated by layers; by root or top cuttings when intended for planting where severe cold may find the ground unprotected. It is possible that heavy mulching in the autumn might have saved some of the plants referred to above, but this work is laborious and not always satisfactory in its results.

Ottawa, Canada. *John Craig.*

The Massing of Wild Flowers.

To the Editor of Garden and Forest:

Sir,—Superintendents of parks and owners of extensive private grounds have much influence in moulding public taste in horticultural matters. Learned works on floriculture or landscape-gardening are read by the few, but the gardener's work is an illustration that he who runs may read. Naturally enough, therefore, his mistakes are copied and his successes patterned after on every hand. It is a gratification to the true lover of our American flora to note that those in charge of extensive grounds are of late years adding more and more of our best native shrubs, climbers and herbs to their planting lists. These plantings, however, rarely show the breadth and plenitude of nature at her best. They show a narrowness of scope, a paucity of effect, as if the authors feared to follow nature in her lavish displays.

It is true that around our villages and through the long-settled portions of our country the flora is scattered thinly, with rarely any breadth or mass of any one species. The fact is, that something like extermination has been going on for many years. But away from the homes of man and the haunts of cattle the

scene is changed. Looking over the unbroken, unbrowsed prairies in June and July we see acres upon acres of bloom. Here one can find a hundred solid acres of Phlox, white, mauve, pink, carmine, crimson and red, and all this dashed with the brilliant red of ten thousand flowers of Lilium Philadelphicum. A tiny rivulet, rippling past banks fringed as far as the eye can reach with the mingled scarlet and indigo hues of our two brightest Lobelias; a sweep of lowland one solid sheet of azure-blue Houstonias, and a wooded hillside thickly dotted with thousands upon thousands of the golden bells of Erythronium Americanum; these are other examples of nature's floral wealth that might be multiplied indefinitely, and why could they not be imitated in our large parks, or on a smaller scale in our less spacious ones?

One tires of the artificiality of carpet-beds and formal parterres, and it is doubtful if these things ever gave a tired city toiler a longing for the country. But a bit of nature that tells of the wildwood and the river path is a standing invitation to turn from noisy streets to the country's peace and quietude. If the masses in our crowded cities cannot go to nature for enjoyment, why not bring real nature to them—and nature in one of her most inspiring moods?

Pineville, Mo. *Lora S. La Mance.*

Protecting Roses in Winter.

To the Editor of GARDEN AND FOREST:

Sir,—In Wisconsin we must protect in winter, climbers, such as the Prairie Queen and all hybrid Perpetual Roses, or they die. In the rural districts this is made difficult by the field mice, which work into the litter, where bush or vine is laid down, or up into the windings of those left erect, and gnaw off the stems to make room for their nests. Many lay their choice Roses on the ground and cover with inverted sods and then with litter. This plan succeeds, but is a great task, and uncovering must be done early, or the plant is smothered. The risk of a late frost must be taken.

At my summer place in Lake Mills I have for four years tried the experiment of a rough board housing or "lean-to," otherwise tight, but wide open on the north side. A few dead leaves are scattered around the roots, but nothing more. Covers are kept on until after May 15th. The shoots start late, and are somewhat pale, of course, but never have suffered from the uncovering, and I have never lost wood or failed of a luxuriant bloom.

This plan beats the mice, retards spring starting, and does away with the hurry to uncover. Perhaps the idea is new. At any rate, it is not borrowed and is novel in that neighborhood.

Chicago, Ill. *David E. Bradley.*

Sprouting Pines.

To the Editor of GARDEN AND FOREST:

Sir,—To the interesting notes on sprouting Pines, given in No. 482 of GARDEN AND FOREST by Mr. Pinchot, I can add the following:

(1) The sprouting of Pinus echinata, which Mr. Pinchot supposes to have observed for the first time, is, as I have often had occasion to see, a common occurrence over its entire field of distribution. Dr. Mohr, in his monograph on the Timber Pines of the Southern States, on page 98 (Bulletin No. 13 of Division of Forestry), writes as follows about this capacity of the Long-leaf Pine:

"During this season (the second year) adventitious buds appear at the collar of the stem, which bring forth vigorous sprouts, particularly if the stem has sustained the slightest injury. They are apt to form strong branches before the tree has reached its fourth or fifth year. Such branches, which are produced profusely from the stumps of larger trees, scarcely survive another season."

(2) To the Pines which produce persistent sprouts one of the southern species is to be added. Mr. Roth, of the Division of Forestry, now traveling in the south, sends us a specimen of the root of a Pinus serotina sapling with the signs of at least two crops of sprouts and a number of living sprouts, the largest of which is at least four or five years old, with a length of nearly four feet and twenty millimeters diameter at the root-collar. Mr. Roth states that hundreds of cases of such sprouting can be observed on an acre, some of those seen being ten years and more old. Logs as well as scrubby trees, much like those of Pinus rigida, are clothed along the stem with short sprouts.

This Pine, by the way, known to the loggers as "Marsh Pine," forms a considerable proportion of the lumber cut along the seacoast of North Carolina, where, with Pinus palustris, it covers extensive flats, or, with P. Tæda, goes into the marshes, often replacing P. Tæda and becoming the only occupant.

It develops nearly as well as the latter, averaging about one foot in height per year, and in six years making a diameter of thirty inches, with forty feet of log-length. It bleeds freely, and is bled for turpentine, as it seems all the southern Pines now are, with the exception of Pinus glabra.

While this capacity for sprouting is interesting physiologically, it can hardly be of economic value, except where, as in the Jersey plains, to keep a vegetable cover in spite of the recurring fires, may be of future benefit.

Washington, D. C. *B. E. Fernow.*

Recent Publications.

Die Nadelhölzer des Cilicischen Taurus. By Walter Siehe. *Gartenflora*, March and April, 1897.

In these short papers an interesting and vivid account is given of the coniferous trees indigenous to the long mountain range on the south coast of Asia Minor. The northern slopes of the mountains have been entirely laid waste by the wanton destruction of the forests for the use of silver smelters, and the trees referred to occur on the southern slopes, and in many cases have been preserved owing to the inaccessibility of the regions where they are at home. The Turk is not the best forester in the world, and of forest management there is none at all. A piaster (five cents) will purchase a tree, and any wandering shepherd is liable, for an evening's entertainment, to set fire to a Cedar of Lebanon, which, if properly hewn and transported a three days' journey to the coast, would realize a small fortune.

Among the trees noted, the Lebanon Pine, Pinus Brutia, Ten., is the most widespread of the Cilician conifers, and forms vast forests at an altitude of from 400 to 1,500 meters. It is a magnificent tree, much resembling P. Strobus, L., in its habit. The forests are very dense, and many of the trees reach a height of thirty meters, of which twenty meters show an absolutely erect, branchless trunk. Higher in the range, from 1,500 meters up to the Cedar zone, the Black Pine, P. Laricio, Poir., var., is encountered in quantities; a fine tree, with smaller cones than those of the type. Abies Cilicica, Ant. & Ky., is abundant, and more famed for its stately beauty than for the usefulness of its wood. In the forest near Namrun it attains a height of more than thirty-five meters, with a diameter of three-fourths of a meter, and preserves its branches down to the ground. In some parts of the range it forms dense forests, to the exclusion of other species, and thrives up to an altitude of 2,000 meters. The highest forest region is the most interesting in the mountain chain, for there, in company of Pinus Laricio and Abies Cilicica, is found that most magnificent of all trees, the Cedar of Lebanon, Cedrus Libani. On the mountains from which it takes its name it is all but extinct; in the Taurus, however, it thrives in great luxuriance, and has been preserved owing to the remote and almost inapproachable crags where it thrives. It is rather widespread, and extends from the Lycian Mountains to the Euphrates, rarely descending below the 1,200 meter level. It grows in open forests, each tree standing alone in stately grandeur, the straight, slender trunks not rarely one meter in diameter and forty meters in height. The cedar-wood is very valuable and twice as costly as that of the Pines. It is yellowish, very close and deliciously fragrant. Its durability was appreciated even when the Temple was built at Jerusalem, and to-day, cut into the panels whereon "icons" are painted, it is in great demand in the Greek Church. Taxus baccata, L., is occasionally encountered, usually only solitary and scattered specimens, some of which attain the considerable diameter of half a meter. Curiously enough, the principal factor in their preservation has been the fear of a certain legendary and revengeful nymph, and it would be very difficult to give their age. The Oriental Cypress, Cupressus sempervirens, L., is rare in the range, and it is noted that the pyramidal form of the tree, so frequent in eastern cemeteries and elsewhere in ornamental planting, was only seen a few times in the wild state.

Notes.

The general catalogue of the Southern California Acclimatizing Association has once more come to this office from Santa Barbara. The list of plants is very interesting and valuable for planters in the southern states, and the hints for cultivation make the little pamphlet what it claims to be, a guide for gardening in the south.

Nymphæa alba and N. Laydekeri were in flower in this vicinity last week. These will be closely followed by N. carnea, N. chromatella and others which are now showing buds. The continued low temperature of the season has checked the tropical Lilies, though, perhaps, few have yet been planted out by prudent growers. With the exception of the Cape Pond-weed, Aponogeton, there do not seem to be any exotic aquatic plants which rival in earliness of flower our native Marsh Marigolds and Arums.

The last issue of the New York *Fruit Trade Journal* gives an account of a newly planted Grape-fruit grove in Florida, said to be the largest in the world. The soil is virgin hummock land which, within a year, was cleared of massive Oak and graceful Palmetto trees and comprises above two hundred acres. The tract extends half a mile along the Manatee River and is more than that distance in depth. The land was thoroughly prepared by experienced cultivators of Grape-fruit, and 20,000 budded trees of the best varieties have been planted.

California papers say that nearly two thousand acres of Canaigre will be in cultivation on the big plantations of the Anglo-American Canaigre Company, near Rialto, in San Bernardino County. This is a native plant of the Dock family, whose roots are rich in tannin, and it is expected that 8,000 acres will be planted at the beginning of the next year. The plant is indigenous to many parts of the state, and wild roots are gathered, planted in rows and cultivated like Sweet Potatoes. It is said that tanning with Canaigre can be done much more rapidly than with other material and requires only days where weeks and months are needed with barks.

The first consignment of winter apples from Australia reached San Francisco last week, and in this fruit Mr. Alexander Craw, the State Quarantine officer, discovered the small white larva of an unknown moth. This grub was tunneling in various irregular directions through the apples close to the skin, and the evidence of its industry was manifested on the outside by an irregular discoloration. Every apple was consigned to the steamer's fire-box, for, undoubtedly, if this Australian apple-miner had been landed it would have become a dangerous enemy to the fruit industry of the Pacific Coast, which has so far escaped from the ravages of the codling moth. This is not the first time that this vigilant quarantine officer has saved the fruit orchards and Orange groves of the west coast from devastation by a new pest.

Fothergilla Gardeni, a shrub of the Witch Hazel family, and the only species of the genus, which was in flower here a fortnight ago, is rarely seen in cultivation either in America or Europe, although it was introduced into English gardens from our southern Alleghanies 130 years ago. For some reason, perhaps because it is not easy to cultivate, it is not as abundant in England now as it once was, although it is very beautiful when in flower, and has an excellent habit, with abundant deep-colored foliage. It is a compact shrub when well grown, five feet high, with numerous stout stems, and in early spring, just before the leaves appear, it is covered with almost globular clusters of long white stamens, the only showy parts of the flower, which make it a conspicuous object. Although it is not found naturally north of North Carolina, it seems to be perfectly hardy in New England, and it flowers profusely in the Arnold Arboretum, although it does not ripen seed. It was figured in this journal, vol. viii., page 445.

The first car-load of California cherries arrived in this city May 19th, when the best grades of favorite varieties brought from $4.30 to $6.25 a box, wholesale, the highest prices ever paid here at auction for this fruit. Early Purple Guigne, considered the earliest good cherry, was the first arrival this year; it is of medium size, sweet and juicy. The dark varieties thus far have been of better quality than those of lighter color. Among the dark sorts seen here now are Early Black Guigne, known also as Baumann's May; Black Tartarian, the best of all the black cherries, and of the largest size when fully mature; Knight's Early Black, Guigne Marbrée, the old and well-known May Duke, of rich subacid flavor, and California Advance, a seedling of Early Purple Guigne. Rockport Bigarreau, Belle d'Orleans and Governor Wood are among the light-colored cherries now in season. Thirty cents a pound is the average price of this fruit in the retail stores, but much of it doubtless remains unsold at this high rate, especially as only a small portion is fully grown and ripe. The first Florida peaches arrived on the 19th instant. The variety known as Honey Sweet has been most abundant, with a few crates of Bidwell. New-crop pineapples are also coming from Florida. Strawberries, from North and South Carolina, and from Maryland and Delaware, are in our markets, together with the first pickings from New Jersey.

Professor Card, of the Nebraska Experiment Station, has been making a study of wind-breaks and publishes a bulletin which embodies the experience of a large number of farmers and fruit growers, both in the east and in the west. A very considerable majority of the writers from all sections of the country believe in the value of wind-breaks, but widely different reasons for this faith are given. The western growers consider the protection against the hot winds of summer as the highest use of wind-breaks, while in the east the protection against windfalls is considered the most important by fruit growers. In the west, too, the saving by the prevention of windfalls is recognized, but of still greater importance is the protection against evaporation of moisture from the soil by winds, which is mentioned in letters from all sections. The western growers protect their land chiefly on the south and west, while the eastern growers need protection on the north and west. The observations at the station bear out in a striking way the opinion expressed by many growers that wind-breaks are of great value in reducing evaporation from the soil. The water contained in samples of soil showed a decreasing amount of moisture for a considerable distance under the lee of the breaks, and evaporation as measured directly by the evaporometer accorded perfectly with the results obtained from the soil samples; and finally the measurement of certain plants themselves corroborated both the other tests and demonstrated fully the practical importance of this protection in preserving the moisture in the soil.

The Castor-oil plant has been cultivated since the earliest historic time, and specimens of it supposed to be over four thousand years old have been found in Egyptian tombs. It is perennial in India, its native country, but as it has spread into less congenial climates it has lost that habit, like the Cotton-plant, and is known to us as an annual. It is commonly supposed that the plant will grow wherever Indian Corn will thrive, and this is true where it is meant to be used as an ornament, but a recent circular published by the United States Department of Agriculture points out that it can only be grown effectively in commercial quantities in warm climates, since its only value is the oil content of the seed, and the general truth which is applicable to nearly all oil-bearing plants holds in regard to this one, namely, the warmer the climate the larger the per cent. of oil. Some varieties of the Castor Bean will mature seed in the northern half of the Indian Corn belt of the United States, but the plant cannot be cultivated there so as to yield paying quantities of oil. It needs a deep, fertile, loamy, friable and well-drained soil, and then where the climate is sufficiently warm it will yield from twenty to twenty-five bushels of beans to the acre, containing from fifty to sixty per cent. of oil. The seeds, after being soaked for twelve hours in tepid water, should be set five or six feet apart each way, two in a hill, and when three or four inches high the weaker plant should be removed. The weeds should be destroyed and the ground kept loose by surface stirring. The seed-spikes should be collected as soon as the pods turn brown and before the seeds drop out of the pods in handling, and placed in the sun until the seeds are partly free from the pods. Frequent gatherings are necessary, so that only such spikes are removed as are in proper condition. The seeds are first cleaned; then, after being gently warmed, are placed under a screw-press, which liberates a whitish liquid. This is mixed with water and boiled for some time, and the impurities are skimmed off as they rise. Clear oil is at length left on the top of the water, the mucilage and starch being dissolved and the albumen coagulated by heat forming a whitish layer between the oil and the water. The oil is further clarified by boiling, which drives off the acrid volatile matter. The Italians have a special method of preparing the oil which rids it of its nauseous flavor, and in this country medicinal oil is manufactured by cold expression from the crushed beans. The oil is largely used in soap manufacture and for machinery. It is the thickest and heaviest of the oils.